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342 356 362 leak. Occasionally, such leakage does not occur significantly until the ninth year of occupancy.

342 361 If structural decay alone forces abandonment of a house, the new one is constructed sometimes only fifty to a hundred yards away. More frequently, however, poor hunting conditions necessitate the construction of the new structure [224] two or three miles distant. Sometimes the scarcity of game requires a move to a greater distance, ten miles or more. In [628] the not infrequent cases when a man and his family flee the neighborhood to escape assassination attempts, the new dwelling may be erected forty to eighty miles from the previous [768] site. The death of the male head of the household is also cause for abandonment.

342 462 476 602 Houses are constructed by the men. While most of the building work technically could be done by the dwelling owner himself, he is generally helped by one or two close male relatives living nearby. The transportation and erection of the main house posts are the only tasks requiring a larger crew. For this effort, the owner invites about half a dozen male neighbors to help him.

342 554 Posts, beams, roof and walls are all lashed firmly together with strips of inner tree bark. Proceeding painstakingly, a man usually constructs a large and impressive structure capable of withstanding not only the natural elements and enemy attack, but also critical evaluation by his neighbors. The size and quality of a man's house is regarded as a serious indication of his personal "power," *kakarma*.

595 574 535 A family averaging only about nine persons typically occupies these rather large houses. While to a casual observer the size of the house might seem excessive in terms of everyday needs, the large floor space is deemed essential for hosting visitors, who are often guests coming to drink and dance. Since dancing is never done outdoors, where persons would

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season,[1] and a diversified crop inventory all contribute to making a continual supply of agricultural products possible throughout the year.

Crops grown for their tubers or corms include, besides sweet manioc, two varieties of sweet potato, *papa chinu* (from Spanish) [taro?], and three other members of the Araceae family (*tayu, tuke, wamiup*), the carrot-like *maya* (arracacha?), and peanuts. Of these, manioc is grown in by far the largest quantity, and is the chief source of starch. The most important non-tuberous food plants are plantains and "white" maize. Other crops grown in relatively small quantities are squash, red peppers, tomatoes, onions, the "gold" banana (*guineo de oro* in Spanish), pineapple, papaya, sugar cane, tobacco, achiote, gourds, cotton. *Tsapo* (for heavy cordage), various fish poisons, medicinal plants, and hallucinogenic drugs, especially *Banisteriopsis* species and *Datura arborea*, are both cultivated in the garden and collected wild in the forest.

Gardens are abandoned after three plantings of manioc, in other words, after about three to five years, because of the growing amount of labor required to clear the ever increasing numbers of weeds. New garden clearings are made nearby in virgin timber except when the actual household is being moved, in which case the gardens are planted at the new house location. This practice of shifting gardens, the so-called "slash-and-burn" or swidden technique, is made possible by the plentiful supply of land. The Jivaro recognize this method, despite the necessity of making new clearings, as involving less effort than attempting to cope with the weeds at the old site.

If a man clears the forest without the aid of neighbors, he tends to make small clearings at different times, while the rarer communal effort results in one large clearing. Whether

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241 595 [574] [574] [554] the garden area is in a single clearing or several, its total size is heavily influenced by the number of wives a man has to cultivate the fields. A household with one wife tends to have a garden of about 50,000 square feet, while a second spouse increases the area to about 65,000, and a third to approximately 75,000. The areal increases are usually not simple multiples of the number of wives because the demand for food and beer to feed visitors tends to lag behind the increments in additional wives. These figures vary, of course, according to the consumption demands of the household, its number of visitors, and the industry of its inhabitants. A man who wishes to gain prestige may clear garden areas of larger size for each of his wives. In such a case, a household in which there are two wives may sometimes have a total garden of 100,000 square feet or more.

By measuring the yield within a restricted section of garden, the writer was able to arrive at a rough estimate of the quantity of a single harvest per 10,000 square feet of cultivated land. The results indicate that a "one wife" household with a garden of some 50,000 square feet may yield these approximate amounts of the major crops: 500 bushels of manioc; a total of 180 bushels of *papa china*, Araceae corms and sweet potato combined; 500 pounds of peanuts; and 90 stems of plantains and bananas.

241 595 462 [606] [612] [243] 241 476 The preparation of a garden begins with clearing the forest. The head of the household, sometimes assisted by a son or son-in-law, fells and trims the trees and clears the undergrowth with a steel axe and machete. His wife (wives) and daughters (if any) drag the slashings into piles, which are burned ten to fourteen days later, provided the weather is sufficiently dry. Women do not assist in making clearings for maize, since the slashings, in the case of that crop, are left unburned on the ground where they fall. Occasionally a man

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may invite his neighbors to help him make a clearing, but this practice is infrequent. 241 476

All the above crops, except maize, are planted together in the same cleared plot. Manioc plants, which are the largest in the garden, are spaced slightly less than two yards apart throughout, with the smaller plants between them. A line of plantain and banana trees separates the garden from the forest. 244 [243] 241

Crop planting is done with two aboriginal tools and the machete. The former are a sharp-pointed planting stick thrust into the soil to make seed holes, and a flat-bladed palm wood digging stick used as a lever to excavate holes for planting and digging up manioc and other tubers and roots. The machete also functions as an excavating tool in planting. 412

Times of planting and harvesting overlap and thereby insure a constant reaping of agricultural staples. Sweet potato, *papa china*, and Araceae species are planted at any time of the year. Sweet potato and *papa china* mature in about six months, while the Araceae tubers and the carrot-like *maya* require a year. Plantain and banana are planted during a full moon at any time of the year, and are harvested twelve to fifteen months later. "White" maize and peanuts are usually sown semiannually at the blooming of the *hutsi* flower, maize maturing in seven months, the other crop in five. 241 244 [243]

The most important crop, sweet manioc, is planted and harvested daily in the same act. As the women dig up the manioc tubers, they place several cuttings from the same plant's stalk in the old hole and partially cover them with earth. Manioc matures in ten to twelve months, but the actual harvesting can, if desired, be delayed as much as an additional year. This continual replanting of the manioc crop on a year-round basis, as the individual plants are dug up, is an important factor in the reliability of Jivaro crop production. Thus the Jivaro, in a real sense, "store" much of [462] 241

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Several cases were encountered in which men gave their daughters in marriage to shamans without the customary bride-service, or even the less common bride-price, because the girls' fathers feared the bewitching power of the shamans. It is also standard practice for shamans to be given gifts of chickens, clothing, and ornaments during casual visits to laymen's houses, even though the shamans have not specifically asked for them. Laymen, in contrast, are usually not given presents by fellow non-shamans without asking for them. Shamans are quite conscious of their privileges, and often boasted to me how well they (compared to non-shamans) were fed when visiting neighbors' houses.

Shamans host neighbors to help in land clearing more often than do non-shamans. Such labor is ostensibly reciprocal, but the shaman's neighbors are reluctant to ask him to work for them in turn. This is partly due to their desire to maintain his goodwill, but there also seems to be a feeling that extensive manual labor is not in keeping with the shaman's supernatural preoccupations and services.

A shaman obtains his power to bewitch or cure exclusively through purchase. To become a shaman, a man presents a sizeable gift to an established practitioner. Such a gift must have some real value in native terms. Typically, it consists of one or two muzzle-loading shotguns, gunpowder, shot, primers, a blowgun and curare, and a machete or steel axehead. In return for this payment, the practicing shaman instructs the apprentice in his new profession and supplies him with magical power, in the form of the spirit servants called *tsentsak* (see pp. 154–66). The exchange of shamanistic power for payment in material valuables (*kuit*) makes the two men *amigri* or "friends," as is the case with normal trading partners (see pp. 128–31). However, the relationship between shamans is a hierarchical one signif-

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fallen trees many a time; they resemble in every respect those of a clearing made by beavers.[8]

Today such "giant" trees as referred to by Up de Graff are often felled in a matter of hours by a single man employing a steel axe, or somewhat longer if he only has a machete.

Despite the increased availability of steel axes and machetes for land clearing and weeding in recent decades, the size of forest areas cleared for gardens has not become larger. In fact, garden size and agricultural production are actually reported to have decreased by perhaps a third of what they were several decades ago.[9] Specifically, elderly informants estimate that the present garden size per nuclear family is one half to three quarters of what it was in 1925. They attribute the decline in agricultural production to the disinclination of the young men to clear land "because they do not like to work hard the way their fathers did." Instead, according to the informants, the younger men have their minds fixed on acquiring shotguns, steel tools, and other goods by becoming shamans or trading partners, and also spend more time than formerly in visiting each other's houses, drinking, and engaging in pre- and extra-marital sexual adventures.

178 241 189 461 577 [592]

There has also been a growing tendency for each household to have several small garden plots rather than the single large garden which was previously typical. This change is attributed to the fact that the steel axe and machete are so much more efficient than the preceding stone tools that a man can now successfully work alone in tree felling without needing to call on his neighbors for help. By avoiding asking them for help, he hopes to maintain better relations with them and thereby secure their services in some more important matter. Since a man usually works alone at intermittent times, the individ-

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ual garden plots tend to be smaller than those resulting from a large sustained effort by a group of neighbors.

Within the household, the basic aspects of life seem little changed except with regard to the amount of time men spend in land clearing and weaving. In recent decades, the time spent on these activities has been reduced, respectively, by the adoption of steel cutting tools and the acquisition of Western and Achuara cloth and articles of dress through trading partnerships. A man instead spends a larger percentage of his time simply relaxing in the house, going hunting to obtain skins for trade, and visiting other households.

The period of temporary matrilocal residence has become shortened in recent decades so that it now usually ends soon after the birth of the first child. Formerly, the couple commonly remained in the wife's parents' house until after the birth of the second or third child. The factors behind this change are not clear except that some informants said that in-laws were not getting along as well as they used to do in the old days. The occasional practice of avoiding temporary matrilocal residence and bride-service, by giving the bride's father a shotgun, is reportedly a recent development.

The introduction of firearms, starting slowly at about the turn of the century, constituted a major technological change in Jivaro culture comparable in importance to the adoption of steel cutting tools. At that time, during the height of the Amazon rubber boom, a few Winchester .44 caliber carbines were acquired by the interior Jivaro from the Achuara, the firearms being captured during head-taking raids. The acquisition of great numbers of firearms by the interior Jivaro, however, is a development of only the last three decades. The new firearms, which are muzzle-loading shotguns of Spanish manufacture, and possessed by virtually every adult male, have been acquired along with gunpowder and shot by trade